

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
8 January 2004 (08.01.2004)

PCT

(10) International Publication Number
WO 2004/003163 A3

(51) International Patent Classification⁷: **A61K 38/17**,
C07H 21/04, C12N 5/10, C12P 21/02, C07K 14/515,
14/47, 14/71

(21) International Application Number:
PCT/US2003/020508

(22) International Filing Date: 27 June 2003 (27.06.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/392,142 27 June 2002 (27.06.2002) US

(71) Applicant (for all designated States except US): **UNIVERSITY OF UTAH RESEARCH FOUNDATION** [US/US];
615 Arapen Drive, Suite 110, Salt Lake City, UT 84108
(US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **LI, Dean, Y.**
[US/US]; 1416 South Wasatch Drive, Salt Lake City, UT
84108 (US). **PARK, Kye, Won** [KR/US]; 736 University
Village, Salt Lake City, UT 84108 (US).

(74) Agent: **BUCHANAN, Matthew, J.**; Brinks Hofer Gilson
& Lione, P.O. Box 10087, Chicago, IL 60610 (US).

(81) Designated States (*national*): AE, AG, AL, AM, AT, AU,
AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU,
CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,
GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC,
LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW,
MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC,
SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA,
UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (*regional*): ARIPO patent (GH, GM,
KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW),
Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),
European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE,
ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO,
SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM,
GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

- with international search report
- before the expiration of the time limit for amending the
claims and to be republished in the event of receipt of
amendments

(88) Date of publication of the international search report:
9 December 2004

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: METHODS AND COMPOSITIONS FOR MANIPULATING THE GUIDED NAVIGATION OF ENDOTHELIAL TUBES DURING ANGIOGENESIS

(57) Abstract: Methods and compositions for manipulating the directed navigation of physiological tracking tubular structures are provided. A novel cell-bound receptor, roundabout-4 (Robo-4), is described. The Robo-4 receptor shows sequence and structural similarity to members of the roundabout family of receptors. Also, the Robo-4 receptor binds Slit ligand, a known receptor of the roundabout receptors. Polynucleotides and polypeptides of the Robo-4 receptor are described.

WO 2004/003163 A3

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US03/20508

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : A61K 38/17; C07H 21/04; C12N 5/10; C12P 21/02; C07K 14/515, 14/47, 14/71
US CL : 536/23.5; 435/69.1, 325; 530/350; 514/12

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 536/23.5; 435/69.1, 325; 530/350; 514/12

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
Please See Continuation Sheet

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	HUMINIECKI et al. Magic roundabout is a new member of the roundabout receptor family that is endothelial specific and expressed at sites of active angiogenesis. Genomics. April 2002, Vol. 79, No. 4, pages 547-552, especially Figure 1; page 549, paragraph bridging columns 1-2; paragraph bridging pages 549-550.	7-12, 19-22
X	WO 02/36771 A2 (IMPERIAL CANCER RESEARCH TECHNOLOGY LIMITED) 10 May 2002 (10.05.2002), Figures 12-15; paragraph bridging pages 40-41; paragraph bridging pages 42-43; page 81, full paragraph 2.	5, 6, 13-16, 18
Y		4, 7-12, 17, 19-22
X	HUMINIECKI et al. In silico cloning of novel endothelial-specific genes. Genome Res. November 2000, Vol. 10, No. 11, pages 1796-1806, especially page 1800, Table 7.	2
Y		4, 7-12, 19-22
T	SULLIVAN et al. New molecular pathways in angiogenesis. Br. J. Cancer. 21 July 2003, Vol. 89, No. 2, pages 228-231.	1-22



Further documents are listed in the continuation of Box C.



See patent family annex.

Special categories of cited documents:	
"A" document defining the general state of the art which is not considered to be of particular relevance	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"E" earlier application or patent published on or after the international filing date	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"O" document referring to an oral disclosure, use, exhibition or other means	"&" document member of the same patent family
"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search

17 September 2004 (17.09.2004)

Date of mailing of the international search report

05 OCT 2004

Name and mailing address of the ISA/US

Mail Stop PCT, Attn: ISA/US
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

Facsimile No. (703) 305-3230

Authorized officer

David S Romeo *J. Roberts for*
Telephone No. (571) 272-1600

INTERNATIONAL SEARCH REPORT

PCT/US03/20508

Continuation of B. FIELDS SEARCHED Item 3:

APS, MEDLINE

search terms: robo, slit, endothelial, angiogenesis